

WHAT IS CLAIMED IS:

1 1. A method for the temporary anti-corrosive treatment of a
2 metal surface that consist predominantly of aluminum and/or zinc; said process
3 comprising:

4 a) placing the surface of the metal in contact with an anti-
5 corrosive composition comprising 2.0 - 400 g/L phosphate ions, 0.5 - 400 g/L
6 fluorometallate ions, and having a pH of between 1.0 - 4.0, for a time period of
7 between 0.1 - 200 seconds;

8 b) drying the anti-corrosive treatment composition on the metal
9 surface to form a primary passivating coating on the metal surface;

10 c) removing the primary passivating coating from the metal
11 surface; and

12 d) conversion coating the metal surface.

1 2. The method of claim 1 wherein the ratio of fluorometallate
2 anions and phosphate ions is 0.10:1.0 to 5.0:1.0.

1 3. The method of claim 1 wherein the phosphate ions are
2 provided in a 75% by weight phosphate solution, based on the total weight of the
3 phosphate solution, and the fluorometallate ions are provided in a 50% by weight
4 fluorometallate solution, based on the total weight of the fluorometallate solution.

1 4. The method of claim 3 wherein the phosphate solution is
2 present in the composition in an amount of 25 - 65 wt. % and the fluorometallate
3 solution is present in the composition in an amount of 35 - 75 wt. %, based on the
4 total weight of the composition.

1 5. The method of claim 4 further comprising water present in an
2 amount of 2 to 50 wt. %, based on the total weight of the composition.

1 6. The method of claim 3 wherein the phosphate solution
2 comprises phosphoric acid and the fluorometallate solution comprises
3 hexafluorotitanic acid.

1 7. The method of claim 6 wherein the phosphoric acid is present
2 in the composition in an amount of 1.0-15.0 wt. %, based on the total weight of the
3 composition, and the hexafluorotitanic acid is present in an amount of 1.0-20.0 wt.
4 %, based on the total weight of the composition, and the composition further
5 comprising water present in an amount of 45-98 wt. %, based on the total weight
6 of the composition.

1 8. The method of claim 1 wherein the metal surface comprises
2 steel treated with a galvanic coating comprising aluminum, zinc and silicon.

1 9. The method of claim 1 wherein the metal surface comprises
2 steel treated with a galvanic coating comprising 55% aluminum, 43.5% zinc and
3 1.5% silicon.

1 10. The method of claim 1 wherein the temperature of the
2 composition during step a) is 15-66°C.

1 11. The method of claim 1 wherein the primary passivating
2 coating method surface is stored after step b) and prior to step c).

1 12. The method of claim 1 wherein the removal of step c) takes
2 place by exposing the primary passivating coating to an alkaline solution.

1 13. A chromium-free, anti-corrosive composition for temporarily
2 passivating metal surfaces consisting predominantly of aluminum and/or zinc, said
3 composition comprising:

4 2.0 - 400 g/L phosphate ions; and
5 0.5 - 400 g/L fluorometallate anions;
6 the composition having a pH of 1.0-4.0.

1 14. The composition of claim 13 wherein the ratio of
2 fluorometallate anions and phosphate ions is 0.10:1.0 to 5.0:1.0.

1 15. The composition of claim 13 wherein the phosphate ions are
2 provided in a 75% by weight phosphate solution, based on the total weight of the
3 phosphate solution, and the fluorometallate ions are provided in a 50% by weight
4 fluorometallate solution, based on the total weight of the fluorometallate solution.

1 16. The composition of claim 15 wherein the phosphate solution
2 is present in the composition in an amount of 25 - 65 wt. % and the fluorometallate
3 solution is present in the composition in an amount of 35 - 75 wt. %, based on the
4 total weight of the composition.

1 17. The composition of claim 16 further comprising water present
2 in an amount of 2 to 50 wt. %, based on the total weight of the composition.

1 18. The composition of claim 15 wherein the phosphate solution
2 comprises phosphoric acid and the fluorometallate solution comprises
3 hexafluorotitanic acid.

1 19. The composition of claim 18 wherein the phosphoric acid is
2 present in the composition in an amount of 1.0-15.0 wt. %, based on the total
3 weight of the composition, and the hexafluorotitanic acid is present in an amount of
4 1.0-20.0 wt. %, based on the total weight of the composition, and the composition
5 further comprising water present in an amount of 45-98 wt. %, based on the total
6 weight of the composition.

1 20. The composition of claim 19 further comprising a polymer
2 solution comprising a polymer comprising the Mannich adduct of
3 polyhydroxystyrene with N-methylglucamine.

1 21. The composition of claim 20 wherein the polymer solution
2 further comprises an acid selected from the group consisting of fluorotitanic acid
3 and fluorozeironic acid.